

Youth Toward Health Careers— An Evaluation Study

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DURING the last decade, the need for qualified personnel in all medical and health-related fields has been demonstrated by many official and voluntary agencies. Two national committees of the Surgeon General of the Public Health Service have addressed themselves to the alarming shortages of both physicians and nurses (1, 2). Not so well known are the serious shortages in the supply of all categories of auxiliary health personnel.

The 1958 report of the First National Conference on Public Health Training stated that official public health agencies alone had well over 2,500 vacancies due to lack of available qualified personnel to fill them (3). In addition, many thousands of positions were then being filled with inadequately trained people.

The 1963 report of the Second National Conference on Public Health Training emphasized that the preparation of new professional health personnel was not keeping pace with population

growth, expected to increase by about 35 million people during the current decade. The highest population increases are expected in those groups that use health services most frequently, children under 15 years and persons over 65 years of age. Furthermore, constriction in the proportion of persons between ages 20 and 64 is expected, a fact of special significance since most professional and technical services must be provided by persons in this age bracket (4).

This is the manpower situation today and there is every indication that it will worsen with the implementation of new Federal health and welfare legislation.

In an effort to decrease the gap between personnel supply and demand in the health field hundreds of health careers projects have been undertaken throughout the country. The health careers program of the North Shore Heart Association chapter differs from others that have been reported in the literature in three major areas.

For one, the project, not unlike many others, was to give students a firsthand contact with practitioners in a variety of health professions and in settings where there was adequate opportunity for small group discussion. Participants had the opportunity to see the health career representatives on the job in their natural environments. Support for use of this approach is very well expressed by Bunnell in these words: "For too long we have been satisfied with having our recruiting done by intermediaries. It's time

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for doctors, nurses, medical technicians, and dentists to become involved directly in the recruiting process—to meet talented young people, to talk with them realistically about their professions, to take them into their offices, their laboratories, and on to the wards so they may have firsthand information concerning the professions they are considering. The health careers are full of excitement and challenge, and we need to communicate this to students in the most effective possible way—by direct contact with the professions” (5).

A second and less common characteristic was the aim to focus attention on students of junior high school age. Students participating were in grades 8, 9, and 10 in the public schools of 14 communities. Support for this emphasis can be obtained from several sources. Bunnell says, “I think there has been an almost total failure of communication between the junior high schools and the professional schools, the professional societies, and lay groups. Are you surprised that I am concerned about communications with junior high school students? I am very sure that many of the basic attitudes which affect later, specific career decisions are acquired during the junior high school years. . . . I think it is a mistake to seek a specific professional commitment at the junior high level, but it is not too early to seek a basic commitment to the health-related sciences and to the idea of service for the improvement of human welfare” (5). Cooley feels we should focus on upper elementary and junior high students when planning programs to interest young people in science careers (6).

Thirdly, the project rested on the premise that a fundamental prerequisite to sound program development is assembled, analyzed, and interpreted factual information. Such information should be obtained and analyzed by a nonparticipatory advisory committee and made available to all resource people directly involved in planning and conducting the health career programs. If more effective health career programs are to be developed, we must have data on the effectiveness of our current attempts. Health careers are in serious competition with other professions and occupations for available talent and manpower. Many professions and occupations offer remuneration in excess of that of the health pro-

fessions and yet require less expensive training and investment of less educational time. Furthermore, the extensive and varied opportunities in the health field have limited visibility to school guidance personnel and hence to students (7). Since health career programs will face ever keener competition in the future, we need to find ways of assessing and improving their quality.

The Health Careers Program

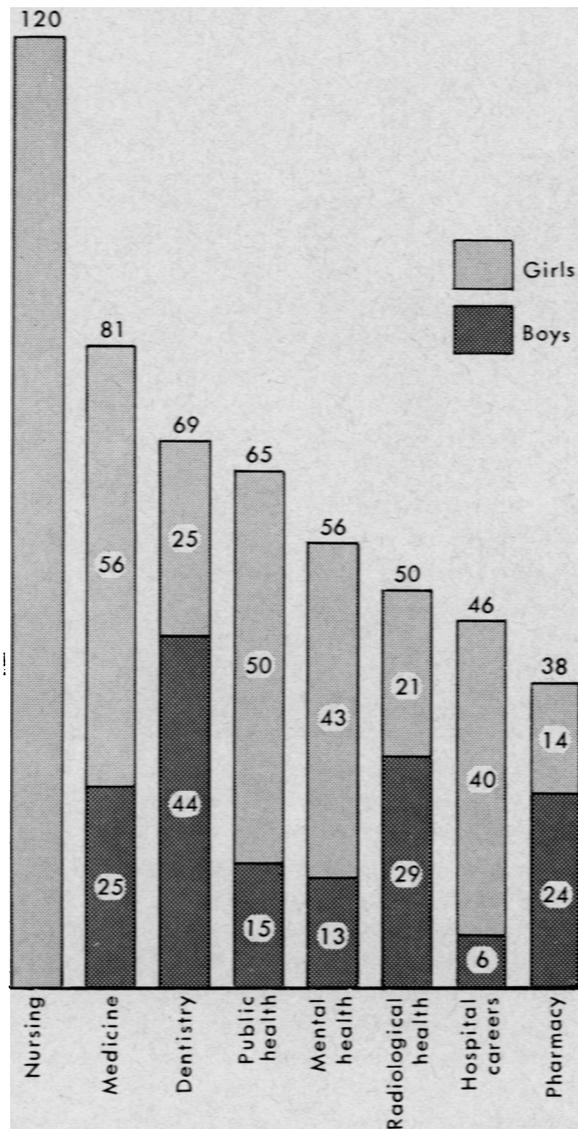
The North Shore area of the Massachusetts Heart Association, initiators of the project, includes 4 cities and 10 towns located in southern Essex County. The county population in 1963 was approximately 204,000 persons. The economy is integrated with that of highly industrialized Metropolitan Boston, with an average family income of about \$6,000 (8). In October 1962, there were 11,000 pupils in the public high schools of the project area (9). Outside this area in the northeastern part of Essex County is a regional high school in which all evaluative instruments were pretested.

In the 14 project cities and towns there were approximately 9,900 pupils in grades 8, 9, and 10 during the school year 1963–64. Because attendance at all health career activities was noncompulsory, the audience at each program was self-selected. Furthermore, space restrictions in each school, hospital, or laboratory setting imposed further selection procedures which biased the samples in other directions.

Objectives of a group studying the program. A study was designed to determine if the health careers program of the North Shore Heart Chapter was

1. Obtaining broad interagency cooperation in developing all programs and activities;
2. Initiating, developing, and encouraging an interest in and knowledge of health careers among 8th, 9th, and 10th grade pupils from public schools of the area; and
3. Involving professional and related health and education specialists as resource people in the program and its evaluation. The program had been in operation since 1957 and the plan to evaluate it was initiated in October 1961. The study began in July 1963 and was terminated in July 1964. The study group evaluated the responses of the students, observers, and resource

Boys and girls attending each health careers program, North Shore project area, 1963-64



people involved in the program and developed a series of conclusions regarding the future course of health career programing.

Program procedures. To achieve inter-agency cooperation a project technical advisory committee, composed of administrative, guidance, and education official and voluntary health personnel, was formed. The group met monthly, serving not only as a liaison group to advise the study project director and coordinator, but also as an action potential that helped

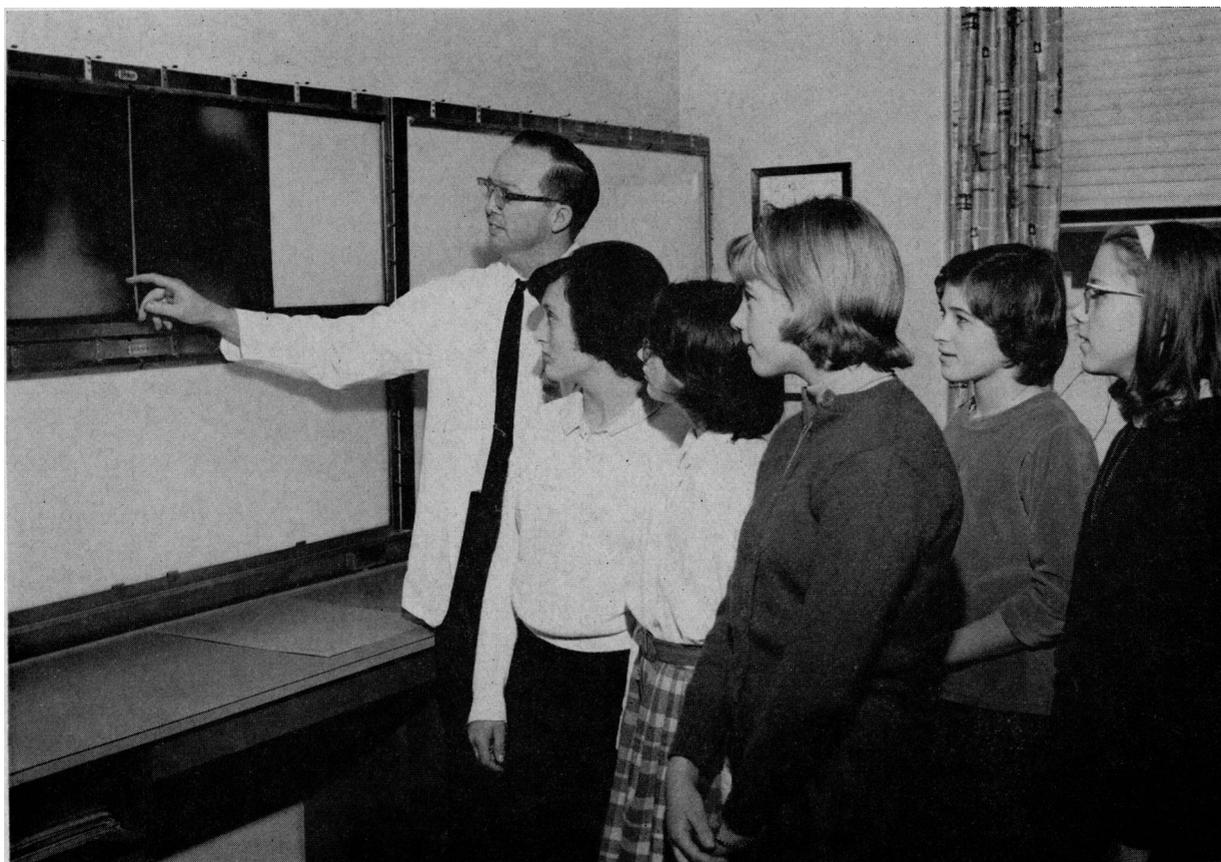
to implement the program in the public schools throughout the study period. Staff of a variety of selected community agencies worked actively on planning and programing of all health career activities, and broad interagency cooperation was obtained.

One of the procedures used to achieve student interest and educator involvement was the distribution of 71 health career materials kits to all high schools through the guidance departments. These materials were evaluated by the recipients using a questionnaire contained in each kit. Ninety-four percent of the questionnaires were completed and returned. Recipients of the kits chosen in a systematic random sampling were interviewed to obtain specific suggestions for improvement of materials.

Another procedure used was the cooperative planning of a series of the nine health career programs in both school and field settings that are listed here.

<i>Health career programs</i>	<i>Specialized participation</i>
Nursing (two programs)-----	Medical, surgical, obstetrical, and pediatric nursing.
Dentistry-----	Oral pediatrics, oral pathology, preventive dentistry, prosthetic dentistry, and research.
Medicine-----	Cardiology, surgery, anesthesiology, radiology, dermatology, pathology, and medical research.
Mental health-----	Psychiatry, psychology, psychiatric nursing, psychiatric social work, and occupational therapy.
Pharmacy-----	Retail pharmacy, hospital pharmacy, pharmacological research, detail work, and pharmaceutical teacher.
Hospital careers-----	Medical technology, X-ray technology, physical therapy, dietetics, medical records librarian, hospital pharmacy.
Public health-----	Sanitary engineering, sanitary technology, and public health nursing.
Radiological health-----	Laboratory research under U.S. Public Health Service, university research, and industrial research.

These programs provided an opportunity for students to meet and talk with distinguished workers from 37 different health specialty fields. This procedure was employed on the assumption that programs in which an interest in health careers is stimulated and a functional knowledge, as perceived by the students participating,



Students shown an aspect of hospital careers

about health careers is gained will have some impact in determining eventual career choice. Each activity was reviewed systematically and continuously by a planning committee to refine the quality of the program in terms of student interest.

To evaluate these programs the advisory committee developed and pretested a series of pre- and postmeeting questionnaires which were designed to obtain responses from pupils, resource people, and school personnel who attended the various health career activities with their students. Analysis of these questionnaires provided realistic though somewhat subjective data related to such factors as specific dimensions of program quality, impact of program activities on student interest and knowledge, and reasons for positive and negative impact. Results from each analysis were fed back to program planners and resource people for use in improving future program quality.

School superintendents were interviewed by

the study project coordinator early in the school year at which time liaison representatives were appointed in each school system. This procedure facilitated orientation of all resource people regarding the project objectives, encouraged uniformity in the self-selective registration by students, and provided a feedback mechanism in each school for program evaluation. At the conclusion of the project, 50 percent of the liaison representatives were interviewed by the study coordinator.

Selected Results

Student participation. Respondents totaled 525 boys and girls from grades 8, 9, and 10 of 11 public school systems. Pupils from grade 8 represented approximately 58 percent of the total attendance. This predominance of younger pupils was maintained at seven of the nine health career programs. At the other two, which covered public health and radiological health, pupils from grade 9 were in the major-

Table 1. Career choices of pupils, North Shore project area, 1963-64

Career	Number students	Percent students
Nurse.....	185	35.4
Doctor.....	78	14.9
Other health-related careers.....	69	13.2
Teacher.....	55	10.5
Dentist.....	31	5.9
Scientist (except engineer).....	28	5.4
Engineer.....	24	4.6
Miscellaneous.....	23	4.4
Secretary.....	13	2.5
Veterinarian.....	6	1.1
Architect.....	6	1.1
Lawyer.....	5	1.0
Total.....	¹ 523	100.0

¹ 2 pupils did not express a career choice.

Table 2. Questions pupils asked most frequently, North Shore project area, 1963-64

Question	Grade 8	Grade 9	Grade 10	Total
Requirements and training.....	178	94	62	334
Information on subject.....	94	52	26	172
Opportunities and facilities.....	80	56	34	170
Career functions.....	85	27	30	142
Working conditions.....	31	20	18	69
General career information.....	23	11	0	34
Significance of career.....	9	9	3	21
Total.....	500	269	173	942

ity. Pupils from grade 9 represented 25 percent of the total attendance and pupils from grade 10, 17 percent. Tenth graders were in a minority at seven of the nine programs. Only at programs on mental health and hospital careers did they attend in greater numbers than did ninth graders (see chart).

Not only did eighth grade pupils attend the health career activities in greater numbers than did those from other grades, but their ability to discriminate in giving answers to both pre- and postmeeting questionnaires was equally reliable.

Preprogram career interest. Personal career choices of 523 respondents were recorded at

the beginning of each program. About 35 percent of all pupils expressed a preference for nursing, 15 percent for medicine, and 13 percent for some other career related to health. Personal career choices of pupils in rank order are shown in table 1.

Student questions. The questions most frequently asked by pupils at the beginning of all but two programs were in the area of training and career requirements. At the other two programs, those on mental health and radiological health, questions were most frequently related to the subject matter itself (table 2).

Student reaction to programs. In the total postmeeting ratings, approximately 53 percent of the students considered the health career programs "excellent," 41 percent "good," and 5 percent "fair." Other answers were negligible (table 3). This rating was maintained at all

Table 3. Pupils' rating of all health career programs, North Shore project area, 1963-64

Rating	Grade 8	Grade 9	Grade 10	Total	Percent
Excellent.....	170	63	42	275	52.9
Good.....	114	58	40	212	40.8
Fair.....	10	10	4	24	4.6
Poor.....	2	0	0	2	.4
No answer.....	4	3	0	7	1.3
Total.....	300	134	86	¹ 520	100.0

¹ 5 students did not respond to this question.

Table 4. What pupils liked best at health career programs, North Shore project area, 1963-64

Category	Grade 8	Grade 9	Grade 10	Total
Tour.....	281	115	78	474
Specific resource persons.....	133	71	45	249
Visual aids.....	74	18	6	98
Demonstration of equipment.....	51	33	12	96
Discussion.....	39	23	13	75
Contact with patients.....	36	11	19	66
Attitudes and environment.....	14	25	3	42
Information on subject.....	10	9	5	24
Total.....	638	305	181	1,124

individual programs except those on radiological health and dentistry, where the number of "good" ratings was equal to the "excellent" ratings, and in hospital careers where "good" ratings exceeded "excellent."

Resource people were rated by pupils on the basis of how well each had been prepared, how enthusiastic each was, and how clearly each was understood. Slightly more than 68 percent of the resource people were rated "excellent" by the pupils, 25 percent were rated "good," and 6 percent "fair." It is apparent that the eighth grade pupils tended to rate resource people on a more varied and slightly lower scale, but otherwise they followed a pattern similar to that of the older pupils.

More than 85 percent of the pupils said that their questions were answered. Again the eighth grade ratings closely resembled those of the others but with a slightly lower percentage of affirmative answers—84.3 percent for grade 8 as opposed to 85.1 percent for grade 9 and 88.4 percent for grade 10.

Student likes. The activity which approximately 60 percent of the pupils liked best was the tour of the facilities. Demonstrations also ranked high whenever they were included in the program activities. Two programs, dentistry and public health careers, had no tour. Although the preferences for the tour may have seemed negative for the mental health program, this was offset by a high preference for contact with patients, which was a part of that tour.

Table 5. What pupils liked least at health career programs, North Shore project area, 1963-64

Category	Grade 8	Grade 9	Grade 10	Total
Some specific section of tour.....	55	30	22	107
Some specific resource person.....	51	18	11	80
Some physical arrangement.....	32	10	5	47
Reference to illness.....	40	1	0	41
Some talks too long.....	23	9	8	40
Questionnaires.....	11	8	1	20
Discussion.....	13	1	2	16
Wanted some change in programs.....	8	1	0	9
Total.....	233	78	49	360

Table 6. Answers concerning what pupils liked least with positive indications, North Shore project area, 1963-64

Category	Grade 8	Grade 9	Grade 10	Total
No answer.....	49	48	39	136
Not enough tour.....	24	18	15	57
Liked everything.....	20	12	4	36
Total.....	93	78	58	229

Table 7. Why pupils' interest remained the same or decreased, North Shore project area, 1963-64

Reason given	Remained the same	Interest decreased	Total
Interested in another field.....	32	0	32
Needed more information.....	16	3	19
Realized not suited for particular field.....	6	12	18
Already much interested.....	15	0	15
Not interested in the first place.....	8	6	14
No reason given.....	4	1	5
Information too advanced.....	4	0	4
Total.....	85	22	107

The mental health careers program, offering the only opportunity for conversing with patients and professional persons together, was the "liked best" activity of about 50 percent of the pupils.

Resource people at the public health and radiological health programs, who had an unusual rapport with pupils or used good visual aids or both, were rated relatively high by the students. At the dentistry program, however, pupils selected resource people and visual aids because this constituted the major part of the program and there was little else to select. At the two programs that stressed small group discussions with self-selected groupings, this technique ranked high in the "liked best" categories. Table 4 shows what pupils "liked best" from all health career programs.

Student dislikes. In answer to the question, "What did you like least?", almost 39 percent of the pupil answers indicated that they "liked



Demonstration on careers in radiological health

everything," wanted "more," or had nothing to list. Others disliked specific resource people or specific sections of the tour, such as the medical library of the careers on medicine tour or the geriatric wards of the careers in mental health. Strong disapproval of talks that were too long was expressed frequently (tables 5 and 6).

Changes in student interest levels. More than 79 percent of the pupils said that their interest had increased because of the programs, 16 percent that it had remained the same, and 4 percent that it had decreased.

The primary reason for a decrease in interest was the realization by pupils that they were not suited for a particular career. This was most clearly indicated in the program on careers in dentistry where films on pathology were shown. About 50 percent of those whose interest remained the same were already more interested

in some other career (table 7).

The importance of using interest indicators in studying career choice has recently been documented by Mierzwa and Cooley in a study of 11th grade boys enrolled in nine public high schools in eastern Massachusetts who were in the "potential scientist" pool (10). The researchers rated the relative effectiveness in predicting scientific career choice of ability, interest, environment, temperament, and personality systems. The best predictor at the 11th and 13th grade levels was interest. This indicates that the relative importance of interest was stable as a determinant of career choice in science over the 2-year period studied.

Resource persons' and observers' reactions. More than 90 percent of the resource people rated pupil attention high, 63 percent rated pupil questions highly relevant, and 63 percent

rated the program a highly useful experience. The physical arrangements were rated adequate by 100 percent of the resource people, and the orientation adequate by 92 percent of the resource people.

The observers' evaluation of the program followed a pattern similar to that of pupils; 52 percent rated the program "good," 45 percent "excellent," and 3 percent "fair." Fifty-eight percent of the speakers received "excellent" ratings, 39 percent "good," and slightly more than 2 percent "fair."

For "encouragement of questions," 46 percent of the moderators were rated "excellent," 39 percent "good," and 14 percent "fair."

Observers evaluated the percentage of increase in interest as higher than did pupils, with 85 percent indicating increased interest and 15 percent indicating that interest remained the same.

Conclusions and Summary

The study of the Massachusetts Heart Association North Shore chapter's health careers program has demonstrated the advisability of obtaining broad interagency cooperation as a first step in planning any health careers program. Members of departments of public health, voluntary health agencies, medical societies, nursing associations, associations of guidance counselors, colleges and schools, hospitals, and research laboratories should be invited to serve on the committee to plan and evaluate all components of the program, plan and program specific career activities, participate in programs, and serve as hosts whenever possible.

The study group advises that future career programs involve pupils from the upper elementary and junior high schools before they have made any definite career choices. The test results of this study indicate that responses of eighth and ninth grade pupils were extremely relevant in terms of appraising program significance to themselves. Younger boys and girls were fully as competent to participate in the evaluation of health career activities as were older pupils. In addition, they attended sessions voluntarily in greater numbers.

The study group recommends the involvement, early in the planning for a health career program, of many professional and related

health and education specialists as resource people at all levels—as panelists, discussion leaders, speakers, tour leaders, and counselors. Before participation these people should be personally oriented as to program objectives and pupils' backgrounds and experiences. After participation these people should receive feedback of pupil and observer reactions as a means of evaluating the effectiveness of their own contributions and of basing future revisions of program activities and format.

The study group found that health career activities in school settings should be closely related to on-the-job realities. It strongly advises that programs be presented in the working environments whenever possible and that pupils be allowed ample opportunities for exploratory tours of facilities and demonstrations of career functions.

The study group recommends that in scheduling career activities the most time be allotted to site visits where informal discussion is encouraged. This study revealed that contact with professionals and their patients was particularly interesting to pupils, and that formal talks usually were rated much lower on the interest scale.

The types of professional persons who have been found to awaken the greatest interest among pupils are those most genuinely interested in their own professions and most inclined to work with young people. Persons with such interests and enthusiasms should be selected as participants whenever possible.

The study group recommends the active involvement of guidance counselors on the planning and programming committee. Counselors were found to have a lively awareness of the need to emphasize the humane professions, and were an essential part of every aspect of the project's operation.

Certain techniques were found to be better than others in maintaining a working relationship with the schools. The appointment of a liaison representative from the guidance department of each school system was extremely helpful in maintaining personal contact throughout the study. It was significant that the liaisons were appointed by school superintendents, who were personally interviewed at the very beginning of the project.

This study has shown that the simultaneous evaluation of health career activities by resource people, committee members, observers, and pupils provided valuable comparisons against which pupils' ability to appraise can be checked. In addition, it has further demonstrated the advisability of evaluating each phase of the program and of feeding back to the planners the factual information after it has been analyzed and interpreted. The study group believes this is a fundamental prerequisite to the continuing improvement of program quality.

In 1960 the health services industry provided 2.6 million jobs; in the 71 broad areas of occupational activity, health services ranked third, surpassed only by agriculture and construction (11). The rate of growth of health services during 1950-60 was second among all major industries; only government educational services had a larger gain. By 1970, educational services will be the largest industry, with health services second. The complex and changing nature of occupational growth and development makes it imperative that young people be exposed early to the many and diverse career opportunities open to them.

More than 200 specific health careers are currently identified (12). The rapid advances in health sciences and technology and the ever-increasing demand for high-quality medical care have created acute manpower shortages across the whole spectrum of health careers. Unless health careers programs are exciting, challenging, informative, and able to compete for student interest with programs about other occupations and professions, the benefits of modern medical science cannot be made available to those who want and need them.

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